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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/541,779	04/03/00	HIROTA	H 133.046

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JAMES J NILLES
NILLES & NILLES SC
FISTAR CENTER SUITE 2000
777 EAST WISCONSIN AVENUE
MILWAUKEE WI 53202-5345

EXAMINER	
SOLAK, T	
ART UNIT	PAPER NUMBER
3746	8

DATE MAILED: 05/09/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/541,779	Applicant(s) HIROTA, HISATOSHI	
	Examiner Timothy P. Solak	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 April 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) *1-9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☒ Notice of References Cited (PTO-892)
16) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18) ☒ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Specification

3. The disclosure is objected to because of the following informalities:

- Recitation of "spring 32" page 3, lines 27 and 28 and page 4 lines 6 and 8, should be --spring 33--.
- Recitation of "discharge pressure port 20d" page 5, line 7 should be --discharge pressure port 28d--.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 11, 12, 14 and 15 are rejected under 35 U.S.C. 101 for combining apparatus limitations into the steps of a method claim. Applicant's set forth an apparatus preamble and thereafter follows with method steps in the recitation of the body of the claims. Accordingly, the improper inclusion of both apparatus and method language set forth an inappropriate claim. Consequently, the claims fail to conform with current U.S. practice.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 10-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 10 recites the limitation "pressure receiving area" in lines 12 and 19, rendering the claim indefinite. The "pressure receiving area" is loaded by both a "inhalation pressure" in line 13 and a "variable control pressure" in line 20. Are these two different areas?

8. Regarding claim 13, recitation of "another port" in line 8 renders the claim indefinite because the claim includes elements not actually disclosed (those encompassed by "another port"), thereby rendering the scope of the claim unascertainable.

9. Claims 11, 12, 14 and 15 are rejected as being incomplete for presenting non-bonafide method claims. Applicants set forth an apparatus preamble followed by method steps in the body of the claims. Accordingly, the improper inclusion of both apparatus and method like

language render the claims indefinite. Therefore, these claims have not been treated in the art rejections. However, this is not to be presumed as an indication of allowable subject matter.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoigawa et al. (4,932,843), in view of Kimura et al. (5,588,807). Itoigawa et al. teach a variable capacity controller of a compressor comprising: a pressure controlled capacity variation mechanism 40 connected to a solenoid actuated capacity controller 400. Itoigawa et al. disclose the capacity controller includes: a valve seat 405a located between a first valve chamber (area connected to port 98, see Figure 3) and a second valve chamber 416; and a valve closure part 403/413 in communication between a differential pressure port 98 connected to the control capacity variation mechanism 40 and a discharge pressure port 96. Itoigawa et al. further disclose the piston actuated closure part includes: a pressure receiving area 416 loaded by inhalation pressure and a solenoid 414 for generating a thrust force for actuating the piston actuated valve closure part relative to the valve seat. Itoigawa et al. further teach a pressure responsive piston valve body 403 loaded in an opening direction by a spring 417 force. Itoigawa et al. discloses the piston actuated valve closure part is located at one side of the valve seat 405a in the first valve chamber connected to a differential pressure port 98 and is formed at one end of

the piston valve body with a pressure receiving area 403 loaded by variable control pressure in a closing direction. Itoigawa et al. further disclose the piston actuated valve closure part 413 is slidably provide within the second valve chamber 416, with the pressure receiving area loaded with pressure from an inhalation pressure port 97 in the opening direction of the piston actuated valve closure part. Itoigawa et al. further teach the differential pressure port is connected to a control pressure cylinder 200 and increasing the control pressure adjusts the compressor capacity towards a maximum (column 10, lines 48-54)

Although Itoigawa et al. teach most of the limitations of the claims including that thrust from a solenoid, supplied with a current, determines the value of the differential pressure, they do not disclose that energizing the solenoid opened the valve. It was old and well known in the art that obtaining identical functions, such as the opening or closing of a valve, by either activating or deactivating a common solenoid advantageously simplified a control system. Therefore, it would have been obvious to one of ordinary skill in the art of controls at the time the invention was made to have used the application of current to the solenoid to open the valve in the compressor taught by Itoigawa et al., to have advantageously simplified the control system.

Although Itoigawa et al. teach most of the limitations of the claims including a valve with an inhalation and discharge port, they do not disclose the ports interconnected by a leakage passage. Kimura et al. (807) disclosing a controller for a variable displacement compressor, specifically teach a leakage passage 23a interconnecting a discharge chamber 4b with a inhalation chamber 4a (see Figure 5). Kimura et al. (807) teach the leakage passage advantageously prevented high pressure from reaching the inhalation chamber (column 5, lines

48-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the leakage passage taught by Kimura et al. (807), in the compressor disclosed by Itoigawa et al., to have advantageously prevented high pressure from reaching the inhalation chamber.

12. Claims 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al. (5,145,326), in view of Kimura et al. (807) (previously mentioned). Kimura et al. (326) teach a method of generating a variable control pressure corresponding to variations in an inhalation pressure (column 5, lines 24-27). Kimura et al. (326) further teach a method of controlling an expanded variation range of a differential pressure by changing the value of a current supplied to a solenoid (column 8, line 61 to column 9, line 2). Although Kimura (326) teach most of the limitations of the claims, they do not disclose a throttling function. Kimura (807) disclosing a variable displacement compressor, specifically teach a method of controlling the capacity of the compressor by maintaining a set value of the differential pressure by adding pressurized gas through a throttling orifice (column 3, lines 34-46) connected to either a low pressure inhalation line (see Figure 3) or a high pressure discharge line (see Figure 4). Kimura (807) teach this method advantageously increased the durability of the compressor (column 1, lines 55-60). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the method of throttling disclosed by Kimura et al. (807), in the method disclosed Kimura et al. (326), to have advantageously increased the durability of the compressor.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Heath (4,072,443) teaches a control valve for a variable stroke pump.
- Kanzaki et al. (5,547,346) teach a variable displacement compressor controlled by the differential pressure between the suction to discharge sides of the compressor.
- Esaki (5,000,666) teaches a control valve operating between a suction and discharge pressure.
- Nakajima (5,056,990) teaches a variable capacity vane compressor.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy P. Solak whose telephone number is 703-308-6197. The examiner can normally be reached on Monday through Thursday form 8am to 6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy S. Thorpe can be reached on 703-308-0102. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7763 for regular communications and 703-305-3588 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0861.

tps
May 6, 2001

Timothy S. Thorpe
Supervisory Patent Examiner
Group 3700